

CLAIMS

What is claimed is:

1. A device for transmitting power from a rotary drive source
5 to a driven load and automatically changing gear ratio
therebetween in response to resistance at the driven load,
comprising an input/output gear set having a central axis and
further comprising:

an input gear, mounted coaxial with the central axis,
10 the input gear for being driven by the rotary drive source;
an output gear, mounted coaxially with the central axis,
for driving the driven load;

an upper motion transfer gear, mounted coaxial with the
central axis and shaft linked to the input gear for rotation
15 therewith;

a lower motion transfer gear, mounted coaxial with the
central axis and shaft linked to the output gear for rotation
therewith;

a variance gear, mounted coaxial with the central axis
20 but not linked with either the input or output gear along
said central axis,

an upper variance determining gear located on a variance
determining axis located on the variance gear radially
outwardly from the central axis, the upper variance
25 determining gear in mesh with the upper motion transfer gear;

a lower variance determining gear located on the
variance determining axis and shaft linked thereon to the

upper variance gear for rotation with the upper variance determining gear, the lower variance determining gear in mesh with the lower motion transfer gear;

wherein during typical operation the input gear shaft
5 drives the upper motion transfer gear, the upper motion transfer gear mesh drives the upper variance determining gear, the upper variance determining gear shaft drives the lower variance determining gear, the lower variance determining gear mesh drives the lower motion transfer gear,
10 and the lower motion transfer gear shaft drives the output gear and thereby drives the driven load; and

wherein when resistance to rotation is presented to the output gear by the driven load the lower variance determining gear begins planetary motion around the central axis whereby
15 the lower variance gear revolves in mesh around the lower motion transfer gear and thereby begins rotation of the variance gear in the same direction as the output gear, the lower variance gear still rotating the lower motion transfer gear but at a slower speed than in typical operation, to
20 lower the effective gear ratio between the input and output gear such that the output gear rotates slower and with more torque than during typical operation.

2. The device for transmitting power as recited in claim 1,
25 further comprising an auxiliary variance control gear, for externally controlling the rotation of the variance control

gear to alter the tendency of the lower motion transfer gear to begin planetary motion around the central axis.

3. The device for transmitting power as recited in claim 1,
5 wherein the gear ratio between the upper motion transfer gear and the upper variance determining gear is substantially the same as the gear ratio between the lower variance determining gear and the lower motion transfer gear.

10 4. The device for transmitting power as recited in claim 3, wherein the input/output gear set further comprises a middle motion transfer assembly, which includes the variance gear, the upper variance determining gear, and the lower variance determining gear as recited, and further has a transfer plate
15 mounted coaxially with the variance gear; wherein the upper variance determining gear and lower variance determining gear are mounted on a variance determining shaft extending between the variance gear and the transfer plate, the variance determining shaft extending parallel to the central axis; and
20 wherein the middle motion transfer assembly rotates around the central axis when the lower variance determining gear orbits around the lower motion transfer gear.

5. The device for transmitting power as recited in claim 1,
25 further comprising a variance control gear set, having a substantially identical structure as the input/output gear set, except wherein the variance control gear set has:

a speed gear analogous to the input gear, the speed gear rotated by the output gear of the input/output gear set;

5 a variance control gear, analogous to the output gear, the variance control gear connected to rotate the variance gear of the input/output gear set in the opposite direction as the output gear of the input/output gear set to cause reverse planetary motion of the lower variance determining gear of the input/output gear set to increase the rotational speed of the output gear of the input/output gear set and
10 increase the resistance necessary for the lower variance determining gear of the input/output gear set to begin planetary motion that would lower the gear ratio between the input and output gear of the input/output gear set.

15 6. The device for transmitting power as recited in claim 5, wherein the gear ratio between the upper motion transfer gear and the upper variance determining gear of the input/output gear set is substantially the same as the gear ratio between the lower variance determining gear and the lower motion
20 transfer gear of the input/output gear set.

7. The device for transmitting power as recited in claim 6, wherein the variance control gear set has its own variance gear; wherein the device further comprises an auxiliary
25 variance control gear, for externally controlling the rotation of the variance gear of the variance control gear set to further alter the tendency of device to lower the gear

ratio between the input gear and output gear of the input/output gear set.

8. The device for transmitting power as recited in claim 7,
5 wherein the input/output gear set further comprises a middle motion transfer assembly, which includes the variance gear, the upper variance determining gear, and the lower variance determining gear as recited, and further has a transfer plate mounted coaxially with the variance gear; wherein the upper
10 variance determining gear and lower variance determining gear are mounted on a variance determining shaft extending between the variance gear and the transfer plate, the variance determining shaft extending parallel to the central axis; and wherein the middle motion transfer assembly rotates around
15 the central axis when the lower variance determining gear orbits around the lower motion transfer gear.